

# T110 Series Axial MIL-PRF-39003 Polar Type and T212 (CSR13 Style)

## Overview

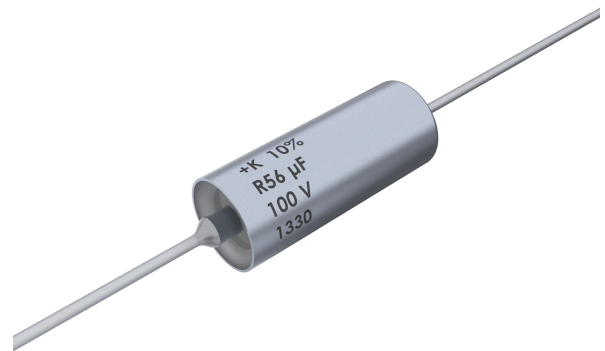
The KEMET standard hermetically sealed T110 Series is targeted for use in high humidity environments. These capacitors are ruggedly built, designed for miniaturized circuitry, and are especially well-suited for coupling, bypass, filtering and RC timing circuits. The T110 Series exhibits excellent stability as well as extremely low DC leakage current, dissipation factor, and ESR/impedance over a wide

temperature and frequency range. Available in standard EIA capacitance values from 0.0047  $\mu\text{F}$  to 330  $\mu\text{F}$  in  $\pm 20\%$ ,  $\pm 10\%$ , and  $\pm 5\%$  tolerances, the T110 Series is now offered in working voltages of 6 VDC to 125 VDC and low ESR limits. Higher CV values in comparable case sizes are available in the KEMET T410 Series.

## Benefits

- Taped and reeled per EIA Specification RS-296
- Marking per MIL-STD-1285
- Qualified to MIL-PRF-39003 (CSR13 Style)
- Failure rate options: Graded – B, C, D, and G  
Exponential – M, P, R, and S\*
- Capacitance values of 0.0047  $\mu\text{F}$  to 330  $\mu\text{F}$
- Tolerances of  $\pm 5\%$ ,  $\pm 10\%$  and  $\pm 20\%$
- Voltage rating of 6 – 125 VDC
- Operating temperature range of  $-55^{\circ}\text{C}$  to  $+125^{\circ}\text{C}$
- Case sizes: A, B, C, D

*\*Failure rates apply to military products only*



## Applications

Typical applications include coupling, bypass, filtering and RC timing circuits in miniaturized circuitry.

## Ordering Information – T110

T	110	A	105	K	050	A	T	7200
Capacitor Class	Series	Case Size	Capacitance Code (pF)	Capacitance Tolerance	Rated Voltage (VDC)	Failure Rate/Military Product Only	Termination Finish	Specification
T = Tantalum	Hermetically Sealed Axial capacitor	A B C D	First two digits represent significant figures. Third digit specifies number of zeros.	J = ±5% K = ±10% M = ±20%	006 = 6 010 = 10 015 = 15 020 = 20 035 = 35 050 = 50 060 = 60 075 = 75 100 = 100 125 = 125	A = N/A	T = 100% Tin S = Standard (Sn/Pb)	All capacitors are sleeved unless specified. 0100 = Without sleeve 7200 = Tape & Reel 7293 & 7443 = Ammo

## Ordering Information – T212 (CSR13 Style)

MIL product

T	212	A	105	K	050	B	S	7200
Capacitor Class	Series	Case Size	Capacitance Code (pF)	Capacitance Tolerance	Rated Voltage (VDC)	Failure Rate/Military Product Only	Termination Finish	Specification
T = Tantalum	Hermetically Sealed Axial Military grade capacitor	A B C D	First two digits represent significant figures. Third digit specifies number of zeros.	J = ±5% K = ±10% M = ±20%	006 = 6 010 = 10 015 = 15 020 = 20 035 = 35 050 = 50 075 = 75 100 = 100	Graded: B = 0.1%/k hours C = 0.01%/k hours D = 0.001%/k hours G = 1.0 %/k hours Exponential: M = 1%/k hours P = 0.1%/k hours R = 0.01%/k hours S = 0.001%/k hours	S = Standard (Sn/Pb)	All capacitors are sleeved unless specified. 0100 = Without sleeve 7200 = Tape & Reel 7293 & 7443 = Ammo 4250 = "A" surge current 4251 = "B" surge current 4252 = "C" surge current

## Ordering Information – MIL-PRF-39003

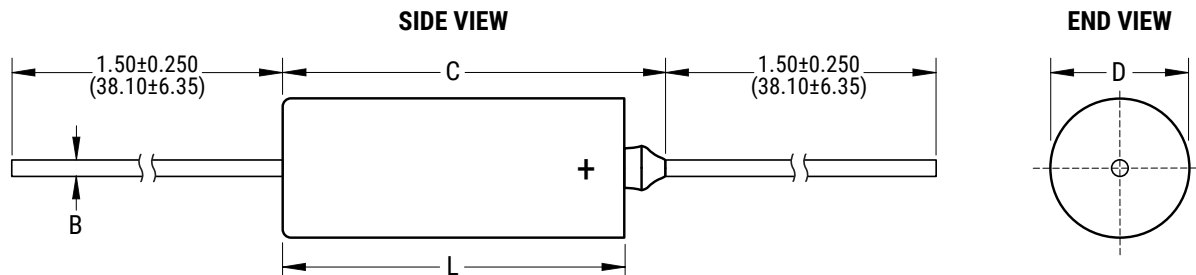
M39003	/01	6003	A
Capacitor Class	Slash	Dash Number	Surge Option
Military Specification Number	Specification Sheet Number	Failure Rate Level	A = C-4250 B = C-4251 C = C-4252 Blank – No surge

Orders should be entered by the military specification number, including the dash number and surge option letter (A, B or C).

## Performance Characteristics

Item	Performance Characteristics
Operating Temperature	-55°C to 125°C
Rated Capacitance Range	0.0047 – 330 µF at 120 Hz/25°C
Capacitance Tolerance	J Tolerance (5%), K Tolerance (10%), M Tolerance (20%)
Rated Voltage Range	6 – 125 V
DF (120 Hz at 25°C)	Refer to Part Number Electrical Specification Table
ESR and Impedance (100 kHz at 25°C)	Refer to Part Number Electrical Specification Table (for reference only)
Leakage Current	Refer to Part Number Electrical Specification Table (At rated voltage up to +85°C and 2/3 of rated voltage applied at 125°C)
Failure Rate (MIL-39003, CSR13 capacitors only)	Approved failure rate: S (0.001%/k hours) – Exponential, D (0.001%/k hours) and C (0.01%/k hours) – Graded

## Dimensions – Inches (Millimeters)



Case Size	Uninsulated		Insulated		B $\pm 0.002$ ( $\pm 0.05$ )	C Maximum
	D $\pm 0.005$ ( $\pm 0.13$ )	L $\pm 0.031$ ( $\pm 0.79$ )	D $\pm 0.010$ ( $\pm 0.25$ )	L $\pm 0.031$ ( $\pm 0.79$ )		
A	0.125 (3.18)	0.250 (6.35)	0.135 (3.43)	0.286 (7.26)	0.020 (0.51)	0.422 (10.72)
B	0.175 (4.45)	0.438 (11.13)	0.185 (4.70)	0.474 (12.04)	0.020 (0.51)	0.610 (15.49)
C	0.279 (7.09)	0.650 (16.51)	0.289 (7.34)	0.686 (17.42)	0.025 (0.64)	0.822 (20.88)
D	0.341 (8.66)	0.750 (19.05)	0.351 (8.92)	0.786 (19.96)	0.025 (0.64)	0.922 (23.42)

**Table 1 – Ratings & Part Number Reference**

Rated Voltage	Rated Cap	Case Size Code	KEMET Part Number	DC Leakage	DF % at 25°C	MIL-PRF-39003 (CSR13) Capacitors										KEMET Equivalent Military
						Dash Number Reference								Part Number		
						Failure Rate Level (%/1,000 hours)										
						MIL-PRF-39003/1K				MIL-PRF-39003/1K						
						Exponential				Graded						
VDC	µF		(See below for part options)	µA at 25°C Max/5 Minutes	120 Hz Maximum	M (1.0)	P (0.1)	R (0.01)	S (0.001)	G (1.0)	B (0.1)	C (0.01)	D (0.001)			
6	2.2	A	T110A225(1)006A(3)	0.3	4											
6	2.7	A	T110A275(1)006A(3)	0.3	4											
6	3.3	A	T110A335(1)006A(3)	0.3	4											
6	3.9	A	T110A395(1)006A(3)	0.3	4											
6	4.7	A	T110A475(1)006A(3)	0.3	4											
6	5.6	A	T110A565J006A(3)	0.3	4	5001	5201	5401	5601	4001	6001	7001	8001	T212A565J006(2)S		
6	5.6	A	T110A565K006A(3)	0.3	4	2241	2481	2721	2961	4002	6002	7002	8002	T212A565K006(2)S		
6	5.6	A	T110A565M006A(3)	0.3	4											
6	6.8	A	T110A685J006A(3)	0.3	6	5002	5202	5402	5602	4003	6003	7003	8003	T212A685J006(2)S		
6	6.8	A	T110A685K006A(3)	0.3	6	2242	2482	2722	2962	4004	6004	7004	8004	T212A685K006(2)S		
6	6.8	A	T110A685M006A(3)	0.3	6	2243	2483	2723	2963	4005	6005	7005	8005	T212A685M006(2)S		
6	8.2	B	T110B825(1)006A(3)	0.3	6											
6	10.0	B	T110B106(1)006A(3)	0.3	6											
6	12.0	B	T110B126(1)006A(3)	0.5	6											
6	15.0	B	T110B156(1)006A(3)	0.9	6											
6	18.0	B	T110B186(1)006A(3)	0.9	6											
6	22.0	B	T110B226(1)006A(3)	0.9	6											
6	27.0	B	T110B276(1)006A(3)	0.9	6											
6	33.0	B	T110B336(1)006A(3)	0.9	6											
6	39.0	B	T110B396(1)006A(3)	0.9	6											
6	47.0	B	T110B476J006A(3)	1.5	6	5003	5203	5403	5603	4006	6006	7006	8006	T212B476J006(2)S		
6	47.0	B	T110B476K006A(3)	1.5	6	2244	2484	2724	2964	4007	6007	7007	8007	T212B476K006(2)S		
6	47.0	B	T110B476M006A(3)	1.5	6	2245	2485	2725	2965	4008	6008	7008	8008	T212B476M006(2)S		
6	56.0	B	T110B566J006A(3)	1.5	6	5004	5204	5404	5604	4009	6009	7009	8009	T212B566J006(2)S		
6	56.0	B	T110B566K006A(3)	1.5	6	2246	2486	2726	2966	4010	6010	7010	8010	T212B566K006(2)S		
6	56.0	B	T110B566M006A(3)	1.5	6											
6	68.0	C	T110C686(1)006A(3)	3.0	6											
6	82.0	C	T110C826(1)006A(3)	3.0	6											
6	100.0	C	T110C107(1)006A(3)	3.0	6											
6	120.0	C	T110C127(1)006A(3)	3.0	6											
6	150.0	C	T110C157J006A(3)	4.5	6	5005	5205	5405	5605	4011	6011	7011	8011	T212C157J006(2)S		
6	150.0	C	T110C157K006A(3)	4.5	6	2247	2487	2727	2967	4012	6012	7012	8012	T212C157K006(2)S		
6	150.0	C	T110C157M006A(3)	4.5	6	2248	2488	2728	2968	4013	6013	7013	8013	T212C157M006(2)S		
6	180.0	C	T110C187J006A(3)	5.5	6	5006	5206	5406	5606	4014	6014	7014	8014	T212C187J006(2)S		
6	180.0	C	T110C187K006A(3)	5.5	6	2249	2489	2729	2969	4015	6015	7015	8015	T212C187K006(2)S		
6	180.0	C	T110C187M006A(3)	5.5	6											
6	220.0	D	T110D227(1)006A(3)	6.0	8											
6	270.0	D	T110D277J006A(3)	6.0	8	5007	5207	5407	5607	4016	6016	7016	8016	T212D277J006(2)S		
6	270.0	D	T110D277K006A(3)	6.0	8	2250	2490	2730	2970	4017	6017	7017	8017	T212D277K006(2)S		
6	270.0	D	T110D277M006A(3)	6.0	8											
6	330.0	D	T110D337J006A(3)	7.5	8	5008	5208	5408	5608	4018	6018	7018	8018	T212D337J006(2)S		
6	330.0	D	T110D337K006A(3)	7.5	8	2251	2491	2731	2971	4019	6019	7019	8019	T212D337K006(2)S		
6	330.0	D	T110D337M006A(3)	7.5	8	2252	2492	2732	2972	4020	6020	7020	8020	T212D337M006(2)S		
10	1.0	A	T110A105(1)010A(3)	0.3	3											
10	1.2	A	T110A125(1)010A(3)	0.3	4											

(1) To complete KEMET Part Number, insert M for ±20%, K for ±10%, or J for 5%. Designates capacitance tolerance.  
 (2) To complete KEMET Part Number (T212), insert Graded failure rate – A for Not Applicable, B for 0.1%/k hours, C for 0.01%/k hours, D for 0.001%/k hours, or G for 1%/k hours; or insert Exponential failure rate – M for 1%/k hours, P for 0.1%/k hours, R for 0.01%/k hours, or S for 0.001%/k hours. Designates Reliability Level.  
 (3) To complete KEMET Part Number (T110), insert Lead Material designator – S for Standard or T for 100% Matte Tin. Designates Termination finish. Refer to Ordering Information for additional detail.

**Table 1 – Ratings & Part Number Reference cont'd**

Rated Voltage	Rated Cap	Case Size Code	KEMET Part Number	DC Leakage	DF % at 25°C	MIL-PRF-39003 (CSR13) Capacitors										KEMET Equivalent Military		
						Dash Number Reference								KEMET Equivalent Military				
						Failure Rate Level (%/1,000 hours)												
						MIL-PRF-39003/1K				MIL-PRF-39003/1K				Part Number				
						Exponential				Graded								
VDC	µF		(See below for part options)	µA at 25°C Max/5 Minutes	120 Hz Maximum	M (1.0)	P (0.1)	R (0.01)	S (0.001)	G (1.0)	B (0.1)	C (0.01)	D (0.001)	Part Number				
10	1.5	A	T110A155(1)010A(3)	0.3	4													
10	1.8	A	T110A185(1)010A(3)	0.3	4													
10	2.2	A	T110A225(1)010A(3)	0.3	4													
10	2.7	A	T110A275(1)010A(3)	0.3	4													
10	3.3	A	T110A335(1)010A(3)	0.3	4													
10	3.9	A	T110A395J0010A(3)	0.3	4	5009	5209	5409	5609	4021	6021	7021	8021	T212A395J010(2)S				
10	3.9	A	T110A395K0010A(3)	0.3	4	2253	2493	2733	2973	4022	6022	7022	8022	T212A395K010(2)S				
10	3.9	A	T110A395M010A(3)	0.3	4													
10	4.7	A	T110A475J010A(3)	0.4	4	5010	5210	5410	5610	4023	6023	7023	8023	T212A475J010(2)S				
10	4.7	A	T110A475K010A(3)	0.4	4	2254	2494	2734	2974	4024	6024	7024	8024	T212A475K010(2)S				
10	4.7	A	T110A475M010A(3)	0.4	4	2255	2495	2735	2975	4025	6025	7025	8025	T212A475M010(2)S				
10	5.6	B	T110B565(1)010A(3)	0.4	4													
10	6.8	B	T110B685(1)010A(3)	1.0	6													
10	8.2	B	T110B825(1)010A(3)	1.0	6													
10	10.0	B	T110B106(1)010A(3)	1.0	6													
10	12.0	B	T110B126(1)010A(3)	1.0	6													
10	15.0	B	T110B156(1)010A(3)	1.0	6													
10	18.0	B	T110B186(1)010A(3)	1.0	6													
10	22.0	B	T110B226(1)010A(3)	2.0	6													
10	27.0	B	T110B276J010A(3)	2.0	6	5011	5211	5411	5611	4026	6026	7026	8026	T212B276J010(2)S				
10	27.0	B	T110B276K010(3)	2.0	6	2256	2496	2736	2976	4027	6027	7027	8027	T212B276K010(2)S				
10	27.0	B	T110B276M010A(3)	2.0	6													
10	33.0	B	T110B336J010A(3)	2.0	6	5012	5212	5412	5612	4028	6028	7028	8028	T212B336J010(2)S				
10	33.0	B	T110B336K010A(3)	2.0	6	2257	2497	2737	2977	4029	6029	7029	8029	T212B336K010(2)S				
10	33.0	B	T110B336M010A(3)	2.0	6	2258	2498	2738	2978	4030	6030	7030	8030	T212B336M010(2)S				
10	39.0	B	T110B396J010A(3)	2.0	6	5013	5213	5413	5613	4031	6031	7031	8031	T212B396J010(2)S				
10	39.0	B	T110B396K010A(3)	2.0	6	2259	2499	2739	2979	4032	6032	7032	8032	T212B396K010(2)S				
10	39.0	B	T110B396M010A(3)	2.0	6													
10	47.0	C	T110C476(1)010A(3)	3.0	6													
10	56.0	C	T110C566(1)010A(3)	3.0	6													
10	68.0	C	T110C686(1)010A(3)	3.0	6													
10	82.0	C	T110C826J010A(3)	3.0	6	5014	5214	5414	5614	4033	6033	7033	8033	T212C826J010(2)S				
10	82.0	C	T110C826K010A(3)	3.0	6	2260	2500	2740	2980	4034	6034	7034	8034	T212C826K010(2)S				
10	82.0	C	T110C826M010A(3)	3.0	6													
10	100.0	C	T110C107J010AS	5.0	6	5015	5215	5415	5615	4035	6035	7035	8035	T212C107J010(2)S				
10	100.0	C	T110C107K010AS	5.0	6	2261	2501	2741	2981	4036	6036	7036	8036	T212C107K010(2)S				
10	100.0	C	T110C107M010AS	5.0	6	2262	2502	2742	2982	4037	6037	7037	8037	T212C107M010(2)S				
10	120.0	C	T110C127J010AS	6.0	6	5016	5216	5416	5616	4038	6038	7038	8038	T212C127J010(2)S				
10	120.0	C	T110C127K010A(3)	6.0	6	2263	2503	2743	2983	4039	6039	7039	8039	T212C127K010(2)S				
10	120.0	C	T110C127M010A(3)	6.0	6													
10	150.0	D	T110D157(1)010A(3)	9.0	6													
10	180.0	D	T110D187J010A(3)	9.0	6	5017	5217	5417	5617	4040	6040	7040	8040	T212D187J010(2)S				
10	180.0	D	T110D187K010A(3)	9.0	6	2264	2504	2744	2984	4041	6041	7041	8041	T212D187K010(2)S				
10	180.0	D	T110D187M010A(3)	9.0	6													
10	220.0	D	T110D227J010A(3)	10.0	8	5018	5218	5418	5618	4042	6042	7042	8042	T212D227J010(2)S				
VDC	µF	Case Size Code	(see below for part options)	µA at 25°C Max/5 Minimum	120 Hz Maximum	M (1.0)	P (0.1)	R (0.01)	S (0.001)	G (1.0)	B (0.1)	C (0.01)	D (0.001)	Part Number				
Rated Voltage	Rated Cap	Case Size Code	KEMET Part Number	DC Leakage	DF % at 25°C	MIL-PRF-39003 (CSR13) Capacitors												

(1) To complete KEMET Part Number, insert M for ±20%, K for ±10%, or J for 5%. Designates capacitance tolerance.  
 (2) To complete KEMET Part Number (T212), insert Graded failure rate – A for Not Applicable, B for 0.1%/k hours, C for 0.01%/k hours, D for 0.001%/k hours, or G for 1%/k hours; or insert Exponential failure rate – M for 1%/k hours, P for 0.1%/k hours, R for 0.01%/k hours, or S for 0.001%/k hours. Designates Reliability Level.  
 (3) To complete KEMET Part Number (T110), insert Lead Material designator – S for Standard or T for 100% Matte Tin. Designates Termination finish. Refer to Ordering Information for additional detail.

**Table 1 – Ratings & Part Number Reference cont'd**

Rated Voltage	Rated Cap	Case Size Code	KEMET Part Number	DC Leakage	DF % at 25°C	MIL-PRF-39003 (CSR13) Capacitors										KEMET Equivalent Military		
						Dash Number Reference								KEMET Equivalent Military				
						Failure Rate Level (%/1,000 hours)												
						MIL-PRF-39003/1K				MIL-PRF-39003/1K				Part Number				
						Exponential				Graded								
VDC	µF		(See below for part options)	µA at 25°C Max/5 Minutes	120 Hz Maximum	M (1.0)	P (0.1)	R (0.01)	S (0.001)	G (1.0)	B (0.1)	C (0.01)	D (0.001)	Part Number				
10	220.0	D	T110D227K010A(3)	10.0	8										T212D227K010(2)S			
10	220.0	D	T110D227M010A(3)	10.0	8	2265	2505	2745	2985	4043	6043	7043	8043		T212D227M010(2)S			
15	0.33	A	T110A334(1)015A(3)	0.3	3													
15	0.39	A	T110A394(1)015A(3)	0.3	3													
15	0.47	A	T110A474(1)015A(3)	0.3	3													
15	0.56	A	T110A564(1)015A(3)	0.3	3													
15	0.68	A	T110A684(1)015A(3)	0.3	3													
15	1.0	A	T110A105(1)015A(3)	0.3	3													
15	1.2	A	T110A125(1)015A(3)	0.3	3													
15	1.5	A	T110A155(1)015A(3)	0.3	4													
15	1.8	A	T110A185(1)015A(3)	0.3	4													
15	2.2	A	T110A225(1)015A(3)	0.3	4													
15	2.7	A	T110A275J015A(3)	0.3	4	5019	5219	5419	5619	4045	6045	7045	8045		T212A275J015(2)S			
15	2.7	A	T110A275K015A(3)	0.3	4	2267	2507	2747	2987	4046	6046	7046	8046		T212A275K015(2)S			
15	2.7	A	T110A275M015A(3)	0.3	4													
15	3.3	A	T110A335J015A(3)	0.4	4	5020	5220	5420	5620	4047	6047	7047	8047		T212A335J015(2)S			
15	3.3	A	T110A335K015A(3)	0.4	4	2268	2508	2748	2988	4048	6048	7048	8048		T212A335K015(2)S			
15	3.3	A	T110A335M015A(3)	0.4	4	2269	2509	2749	2989	4049	6049	7049	8049		T212A335M015(2)S			
15	3.9	B	T110B395(1)015A(3)	0.4	4													
15	4.7	B	T110B475(1)015A(3)	0.7	4													
15	5.6	B	T110B565(1)015A(3)	0.7	4													
15	6.8	B	T110B685(1)015A(3)	0.7	6													
15	8.2	B	T110B825(1)015A(3)	0.7	6													
15	10.0	B	T110B106(1)015A(3)	1.0	6													
15	12.0	B	T110B126(1)015A(3)	1.0	6													
15	15.0	B	T110B156(1)015A(3)	2.0	6													
15	18.0	B	T110B186015A(3)	2.0	6	5021	5221	5421	5621	4050	6050	7050	8050		T212B186J015(2)S			
15	18.0	B	T110B186K015A(3)	2.0	6	2270	2510	2750	2990	4051	6051	7051	8051		T212B186K015(2)S			
15	18.0	B	T110B186M015A(3)	2.0	6													
15	22.0	B	T110B226J015A(3)	2.0	6	5022	5222	5422	5622	4052	6052	7052	8052		T212B226J015(2)S			
15	22.0	B	T110B226K015A(3)	2.0	6	2271	2511	2751	2991	4053	6053	7053	8053		T212B226K015(2)S			
15	22.0	B	T110B226M015A(3)	2.0	6	2272	2512	2752	2992	4054	6054	7054	8054		T212B226M015(2)S			
15	27.0	C	T110C276(1)015A(3)	3.0	6													
15	33.0	C	T110C336(1)015A(3)	3.0	6													
15	39.0	C	T110C396(1)015A(3)	3.0	6													
15	47.0	C	T110C476(1)015A(3)	4.0	6													
15	56.0	C	T110C566J015A(3)	4.0	6	5023	5223	5423	5623	4055	6055	7055	8055		T212C566J015(2)S			
15	56.0	C	T110C566K015A(3)	4.0	6	2273	2513	2753	2993	4056	6056	7056	8056		T212C566K015(2)S			
15	56.0	C	T110C566M015A(3)	4.0	6													
15	68.0	C	T110C686J015A(3)	5.0	6	5024	5224	5424	5624	4057	6057	7057	8057		T212C686J015(2)S			
15	68.0	C	T110C686K015A(3)	5.0	6	2274	2514	2754	2994	4058	6058	7058	8058		T212C686K015(2)S			
15	68.0	C	T110C686M015A(3)	5.0	6	2275	2515	2755	2995	4059	6059	7059	8059		T212C686M015(2)S			
15	82.0	D	T110D826(1)015A(3)	6.0	6													
15	100.0	D	T110D107(1)015A(3)	6.0	6													
15	120.0	D	T110D127J015A(3)	6.0	6	5025	5225	5425	5625	4060	6060	7060	8060		T212D127J015(2)S			
VDC	µF	Case Size Code	(see below for part options)	µA at 25°C Max/5 Minimum	120 Hz Maximum	M (1.0)	P (0.1)	R (0.01)	S (0.001)	G (1.0)	B (0.1)	C (0.01)	D (0.001)	Part Number				
Rated Voltage	Rated Cap	Case Size Code	KEMET Part Number	DC Leakage	DF % at 25°C	MIL-PRF-39003 (CSR13) Capacitors												

(1) To complete KEMET Part Number, insert M for ±20%, K for ±10%, or J for 5%. Designates capacitance tolerance.  
 (2) To complete KEMET Part Number (T212), insert Graded failure rate – A for Not Applicable, B for 0.1%/k hours, C for 0.01%/k hours, D for 0.001%/k hours, or G for 1%/k hours; or insert Exponential failure rate – M for 1%/k hours, P for 0.1%/k hours, R for 0.01%/k hours, or S for 0.001%/k hours. Designates Reliability Level.  
 (3) To complete KEMET Part Number (T110), insert Lead Material designator – S for Standard or T for 100% Matte Tin. Designates Termination finish. Refer to Ordering Information for additional detail.

**Table 1 – Ratings & Part Number Reference cont'd**

Rated Voltage	Rated Cap	Case Size Code	KEMET Part Number	DC Leakage	DF % at 25°C	MIL-PRF-39003 (CSR13) Capacitors										KEMET Equivalent Military
						Dash Number Reference								Part Number		
						Failure Rate Level (%/1,000 hours)										
						MIL-PRF-39003/1K				MIL-PRF-39003/1K						
						Exponential				Graded						
VDC	µF		(See below for part options)	µA at 25°C Max/5 Minutes	120 Hz Maximum	M (1.0)	P (0.1)	R (0.01)	S (0.001)	G (1.0)	B (0.1)	C (0.01)	D (0.001)	Part Number		
15	120.0	D	T110D127K015A(3)	6.0	6	2276	2516	2756	2996	4061	6061	7061	8061	T212D127K015(2)S		
15	120.0	D	T110D127M015A(3)	6.0	6											
15	150.0	D	T110D157J015A(3)	8.0	6	5026	5226	5426	5626	4062	6062	7062	8062	T212D157J015(2)S		
15	150.0	D	T110D157K015A(3)	8.0	6	2277	2517	2757	2997	4063	6063	7063	8063	T212D157K015(2)S		
15	150.0	D	T110D157M015A(3)	8.0	6	2278	2518	2758	2998	4064	6064	7064	8064	T212D157M015(2)S		
20	0.047	A	T110A473(1)020A(3)	0.3	3											
20	0.056	A	T110A563(1)020A(3)	0.3	3											
20	0.068	A	T110A683(1)020A(3)	0.3	3											
20	0.082	A	T110A823(1)020A(3)	0.3	3											
20	0.10	A	T110A104(1)020A(3)	0.3	3											
20	0.12	A	T110A124(1)020A(3)	0.3	3											
20	0.15	A	T110A154(1)020A(3)	0.3	3											
20	0.18	A	T110A184(1)020A(3)	0.3	3											
20	0.22	A	T110A224(1)020A(3)	0.3	3											
20	0.27	A	T110A274(1)020A(3)	0.3	3											
20	0.33	A	T110A334(1)020A(3)	0.3	3											
20	0.39	A	T110A394(1)020A(3)	0.3	3											
20	0.47	A	T110A474(1)020A(3)	0.3	3											
20	0.56	A	T110A564(1)020A(3)	0.3	3											
20	0.68	A	T110A684(1)020A(3)	0.3	3											
20	0.82	A	T110A824(1)020A(3)	0.3	3											
20	1.0	A	T110A105(1)020A(3)	0.3	3											
20	1.2	A	T110A125J020A(3)	0.3	4	5027	5227	5427	5627	4065	6065	7065	8065	T212A125J020(2)S		
20	1.2	A	T110A125K020A(3)	0.3	4	2279	2519	2759	2999	4066	6066	7066	8066	T212A125K020(2)S		
20	1.2	A	T110A125M020A(3)	0.3	4											
20	1.5	A	T110A155J020A(3)	0.3	4	5028	5228	5428	5628	4067	6067	7067	8067	T212A155J020(2)S		
20	1.5	A	T110A155K020A(3)	0.3	4	2280	2520	2760	3000	4068	6068	7068	8068	T212A155K020(2)S		
20	1.5	A	T110A155M020A(3)	0.3	4	2281	2521	2761	3001	4069	6069	7069	8069	T212A155M020(2)S		
20	1.8	A	T110A185J020A(3)	0.3	4	5029	5229	5429	5629	4070	6070	7070	8070	T212A185J020(2)S		
20	1.8	A	T110A185K020A(3)	0.3	4	2282	2522	2762	3002	4071	6071	7071	8071	T212A185K020(2)S		
20	1.8	A	T110A185M020A(3)	0.3	4											
20	2.2	A	T110A225J020A(3)	0.4	4	5010	5230	5430	5630	4072	6072	7072	8072	T212A225J020(2)S		
20	2.2	A	T110A225K020A(3)	0.4	4	2283	2523	2763	3003	4073	6073	7073	8073	T212A225K020(2)S		
20	2.2	A	T110A225M020A(3)	0.4	4	2284	2524	2764	3004	4074	6074	7074	8074	T212A225M020(2)S		
20	2.7	B	T110B275(1)020A(3)	0.5	4											
20	3.3	B	T110B335(1)020A(3)	1.0	4											
20	3.9	B	T110B395(1)020A(3)	1.0	4											
20	4.7	B	T110B475(1)020A(3)	1.0	4											
20	5.6	B	T110B565(1)020A(3)	1.0	4											
20	6.8	B	T110B685(1)020A(3)	1.0	4											
20	8.2	B	T110B825J020A(3)	1.0	6	5031	5231	5431	5631	4075	6075	7075	8075	T212B825J020(2)S		
20	8.2	B	T110B825K020A(3)	1.0	6	2285	2525	2765	3005	4076	6076	7076	8076	T212B825K020(2)S		
20	8.2	B	T110B825M020A(3)	1.0	6											
20	10.0	B	T110B106J020A(3)	1.0	6	5032	5232	5432	5632	4077	6077	7077	8077	T212B106J020(2)S		
20	10.0	B	T110B106K020A(3)	1.0	6	2286	2526	2766	3006	4078	6078	7078	8078	T212B106K020(2)S		
VDC	µF	Case Size Code	(see below for part options)	µA at 25°C Max/5 Minimum	120 Hz Maximum	M (1.0)	P (0.1)	R (0.01)	S (0.001)	G (1.0)	B (0.1)	C (0.01)	D (0.001)	Part Number		
Rated Voltage	Rated Cap	Case Size Code	KEMET Part Number	DC Leakage	DF % at 25°C	MIL-PRF-39003 (CSR13) Capacitors										

(1) To complete KEMET Part Number, insert M for ±20%, K for ±10%, or J for 5%. Designates capacitance tolerance.  
 (2) To complete KEMET Part Number (T212), insert Graded failure rate – A for Not Applicable, B for 0.1%/k hours, C for 0.01%/k hours, D for 0.001%/k hours, or G for 1%/k hours; or insert Exponential failure rate – M for 1%/k hours, P for 0.1%/k hours, R for 0.01%/k hours, or S for 0.001%/k hours. Designates Reliability Level.  
 (3) To complete KEMET Part Number (T110), insert Lead Material designator – S for Standard or T for 100% Matte Tin. Designates Termination finish. Refer to Ordering Information for additional detail.

**Table 1 – Ratings & Part Number Reference cont'd**

Rated Voltage	Rated Cap	Case Size Code	KEMET Part Number	DC Leakage	DF % at 25°C	MIL-PRF-39003 (CSR13) Capacitors													
						Dash Number Reference								KEMET Equivalent Military					
						Failure Rate Level (%/1,000 hours)													
						MIL-PRF-39003/1K				MIL-PRF-39003/1K									
						Exponential				Graded									
VDC	µF		(See below for part options)	µA at 25°C Max/5 Minutes	120 Hz Maximum	M (1.0)	P (0.1)	R (0.01)	S (0.001)	G (1.0)	B (0.1)	C (0.01)	D (0.001)	Part Number					
20	10.0	B	T110B106M020A(3)	1.0	6	2287	2527	2767	3007	4079	6079	7079	8079	T212B106M020(2)S					
20	12.0	B	T110B126J020A(3)	1.0	6	5033	5233	5433	5633	4080	6080	7080	8080	T212B126J020(2)S					
20	12.0	B	T110B126K020A(3)	1.0	6	2288	2528	2768	3008	4081	6081	7081	8081	T212B126K020(2)S					
20	12.0	B	T110B126M020A(3)	1.0	6														
20	15.0	B	T110B156J020A(3)	2.0	6	5034	5234	5434	5634	4082	6082	7082	8082	T212B156J020(2)S					
20	15.0	B	T110B156K020A(3)	2.0	6	2289	2529	2769	3009	4083	6083	7083	8083	T212B156K020(2)S					
20	15.0	B	T110B156M020A(3)	2.0	6	2290	2530	2770	3010	4084	6084	7084	8084	T212B156M020(2)S					
20	18.0	C	T110C186(1)020A(3)	2.0	6														
20	22.0	C	T110C226(1)020A(3)	2.5	6														
20	27.0	C	T110C276J020A(3)	2.5	6	5035	5235	5435	5635	4085	6085	7085	8085	T212C276J020(2)S					
20	27.0	C	T110C276K020A(3)	2.5	6	2991	2531	2771	3011	4086	6086	7086	8086	T212C276K020(2)S					
20	27.0	C	T110C276M020A(3)	2.5	6														
20	33.0	C	T110C336J020A(3)	3.0	6	5036	5236	5436	5636	4087	6087	7087	8087	T212C336J020(2)S					
20	33.0	C	T110C336K020A(3)	3.0	6	2292	2532	2772	3012	4088	6088	7088	8088	T212C336K020(2)S					
20	33.0	C	T110C336M020A(3)	3.0	6	2293	2533	2773	3013	4089	6089	7089	8089	T212C336M020(2)S					
20	39.0	C	T110C396J020A(3)	3.0	6	5037	5237	5437	5637	4090	6090	7090	8090	T212C396J020(2)S					
20	39.0	C	T110C396K020A(3)	3.0	6	2294	2534	2774	3014	4091	6091	7091	8091	T212C396K020(2)S					
20	39.0	C	T110C396M020A(3)	3.0	6														
20	47.0	C	T110C476J020A(3)	4.5	6	5038	5238	5438	5638	4092	6092	7092	8092	T212C476J020(2)S					
20	47.0	C	T110C476K020A(3)	4.5	6	2295	2535	2775	3015	4093	6093	7093	8093	T212C476K020(2)S					
20	47.0	C	T110C476M020A(3)	4.5	6	2296	2536	2776	3016	4094	6094	7094	8094	T212C476M020(2)S					
20	56.0	D	T110D566J020A(3)	5.5	6	5039	5239	5439	5639	4095	6095	7095	8095	T212D566J020(2)S					
20	56.0	D	T110D566K020A(3)	5.5	6	2297	2537	2777	3017	4096	6096	7096	8096	T212D566K020(2)S					
20	56.0	D	T110D566M020A(3)	5.5	6														
20	68.0	D	T110D686J020A(3)	6.0	6	5040	5240	5440	5640	4097	6097	7097	8097	T212D686J020(2)S					
20	68.0	D	T110D686K020A(3)	6.0	6	2298	2538	2778	3018	4098	6098	7098	8098	T212D686K020(2)S					
20	68.0	D	T110D686M020A(3)	6.0	6	2299	2539	2779	3019	4099	6099	7099	8099	T212D686M020(2)S					
20	82.0	D	T110D826J020A(3)	6.0	6	5041	5241	5441	5641	4100	6100	7100	8100	T212D826J020(2)S					
20	82.0	D	T110D826K020A(3)	6.0	6	2300	2540	2780	3020	4101	6101	7101	8101	T212D826K020(2)S					
20	82.0	D	T110D826M020A(3)	6.0	6														
20	100.0	D	T110D107J020A(3)	10.0	6	5042	5242	5442	5642	4102	6102	7102	8102	T212D107J020(2)S					
20	100.0	D	T110D107K020A(3)	10.0	6	2301	2541	2781	3021	4103	6103	7103	8103	T212D107K020(2)S					
20	100.0	D	T110D107M020A(3)	10.0	6	2302	2542	2782	3022	4104	6104	7104	8104	T212D107M020(2)S					
35	0.0047	A	T110A472(1)035A(3)	0.1	3														
35	0.0056	A	T110A562(1)035A(3)	0.1	3														
35	0.0068	A	T110A682(1)035A(3)	0.1	3														
35	0.0082	A	T110A822(1)035A(3)	0.1	3														
35	0.01	A	T110A103(1)035A(3)	0.1	3														
35	0.012	A	T110A123(1)035A(3)	0.1	3														
35	0.015	A	T110A153(1)035A(3)	0.1	3														
35	0.018	A	T110A183(1)035A(3)	0.1	3														
35	0.022	A	T110A223(1)035A(3)	0.1	3														
35	0.027	A	T110A273(1)035A(3)	0.1	3														
35	0.033	A	T110A333(1)035A(3)	0.1	3														
35	0.039	A	T110A393(1)035A(3)	0.1	3														
VDC	µF	Case Size Code	(see below for part options)	µA at 25°C Max/5 Minimum	120 Hz Maximum	M (1.0)	P (0.1)	R (0.01)	S (0.001)	G (1.0)	B (0.1)	C (0.01)	D (0.001)	Part Number					
Rated Voltage	Rated Cap	Case Size Code	KEMET Part Number	DC Leakage	DF % at 25°C	MIL-PRF-39003 (CSR13) Capacitors													

(1) To complete KEMET Part Number, insert M for ±20%, K for ±10%, or J for 5%. Designates capacitance tolerance.  
 (2) To complete KEMET Part Number (T212), insert Graded failure rate – A for Not Applicable, B for 0.1%/k hours, C for 0.01%/k hours, D for 0.001%/k hours, or G for 1%/k hours; or insert Exponential failure rate – M for 1%/k hours, P for 0.1%/k hours, R for 0.01%/k hours, or S for 0.001%/k hours. Designates Reliability Level.  
 (3) To complete KEMET Part Number (T110), insert Lead Material designator – S for Standard or T for 100% Matte Tin. Designates Termination finish. Refer to Ordering Information for additional detail.



**Table 1 – Ratings & Part Number Reference cont'd**

Rated Voltage	Rated Cap	Case Size Code	KEMET Part Number	DC Leakage	DF % at 25°C	MIL-PRF-39003 (CSR13) Capacitors										KEMET Equivalent Military		
						Dash Number Reference								KEMET Equivalent Military				
						Failure Rate Level (%/1,000 hours)												
						MIL-PRF-39003/1K				MIL-PRF-39003/1K				Part Number				
						Exponential				Graded								
VDC	µF		(See below for part options)	µA at 25°C Max/5 Minutes	120 Hz Maximum	M (1.0)	P (0.1)	R (0.01)	S (0.001)	G (1.0)	B (0.1)	C (0.01)	D (0.001)	Part Number				
35	0.047	A	T110A473(1)035A(3)	0.1	3													
35	0.056	A	T110A563(1)035A(3)	0.1	3													
35	0.068	A	T110A683(1)035A(3)	0.1	3													
35	0.082	A	T110A823(1)035A(3)	0.1	3													
35	0.1	A	T110A104(1)035A(3)	0.5	3													
35	0.12	A	T110A124(1)035A(3)	0.5	3													
35	0.15	A	T110A154(1)035A(3)	0.5	3													
35	0.18	A	T110A184(1)035A(3)	0.5	3													
35	0.22	A	T110A224(1)035A(3)	0.5	3													
35	0.27	A	T110A274(1)035A(3)	0.5	3													
35	0.33	A	T110A334(1)035A(3)	0.5	3													
35	0.39	A	T110A394(1)035A(3)	0.5	3													
35	0.47	A	T110A474(1)035A(3)	0.5	3													
35	0.56	A	T110A564(1)035A(3)	0.5	3													
35	0.68	A	T110A684(1)035A(3)	0.5	3													
35	0.82	A	T110A824(1)035A(3)	0.5	3													
35	1.0	A	T110A105(1)035A(3)	0.5	6													
35	1.2	B	T110B125(1)035A(3)	0.5	4													
35	1.5	B	T110B155(1)035A(3)	0.5	4													
35	1.8	B	T110B185(1)035A(3)	0.5	4													
35	2.2	B	T110B225(1)035A(3)	1.0	4													
35	2.7	B	T110B275(1)035A(3)	1.0	4													
35	3.3	B	T110B335(1)035A(3)	1.0	4													
35	3.9	B	T110B395(1)035A(3)	1.0	4													
35	4.7	B	T110B475(1)035A(3)	1.0	4													
35	5.6	B	T110B565J035A(3)	1.0	4	5043	5243	5443	5643	4105	6105	7105	8105	T212B565J035(2)S				
35	5.6	B	T110B565K035A(3)	1.0	4	2303	2543	2783	3023	4106	6106	7106	8106	T212B565K035(2)S				
35	5.6	B	T110B565M035A(3)	1.0	4													
35	6.8	B	T110B685J035A(3)	1.5	4	5044	5244	5444	5644	4107	6107	7107	8107	T212B685J035(2)S				
35	6.8	B	T110B685K035A(3)	1.5	4	2304	2544	2784	3024	4108	6108	7108	8108	T212B685K035(2)S				
35	6.8	B	T110B685M035A(3)	1.5	6	2305	2545	2785	3025	4109	6109	7109	8109	T212B685M035(2)S				
35	8.2	C	T110C825(1)035A(3)	3.0	4													
35	10.0	C	T110C106(1)035A(3)	3.0	4													
35	12.0	C	T110C126(1)035A(3)	3.0	4													
35	15.0	C	T110C156(1)035A(3)	3.0	4													
35	18.0	C	T110C186(1)035A(3)	3.0	4													
35	22.0	C	T110C226J035A(3)	4.0	4	5045	5245	5445	5645	4110	6110	7110	8110	T212C226J035(2)S				
35	22.0	C	T110C226K035A(3)	4.0	4	2306	2546	2786	3026	4111	6111	7111	8111	T212C226K035(2)S				
35	22.0	C	T110C226M035A(3)	4.0	4	2307	2547	2787	3027	4112	6112	7112	8112	T212C226M035(2)S				
35	27.0	D	T110D276J035A(3)	4.5	4	5046	5246	5446	5646	4113	6113	7113	8113	T212D276J035(2)S				
35	27.0	D	T110D276K035A(3)	4.5	4	2308	2548	2788	3028	4114	6114	7114	8114	T212D276K035(2)S				
35	27.0	D	T110D276M035A(3)	4.5	4													
35	33.0	D	T110D336J035A(3)	5.5	4	5047	5247	5447	5647	4115	6115	7115	8115	T212D336J035(2)S				
35	33.0	D	T110D336K035A(3)	5.5	4	2309	2549	2789	3029	4116	6116	7116	8116	T212D336K035(2)S				
35	33.0	D	T110D336M035A(3)	5.5	4	2310	2550	2790	3030	4117	6117	7117	8117	T212D336M035(2)S				
VDC	µF	Case Size Code	(see below for part options)	µA at 25°C Max/5 Minimum	120 Hz Maximum	M (1.0)	P (0.1)	R (0.01)	S (0.001)	G (1.0)	B (0.1)	C (0.01)	D (0.001)	Part Number				
Rated Voltage	Rated Cap	Case Size Code	KEMET Part Number	DC Leakage	DF % at 25°C	MIL-PRF-39003 (CSR13) Capacitors												

(1) To complete KEMET Part Number, insert M for ±20%, K for ±10%, or J for 5%. Designates capacitance tolerance.  
 (2) To complete KEMET Part Number (T212), insert Graded failure rate – A for Not Applicable, B for 0.1%/k hours, C for 0.01%/k hours, D for 0.001%/k hours, or G for 1%/k hours; or insert Exponential failure rate – M for 1%/k hours, P for 0.1%/k hours, R for 0.01%/k hours, or S for 0.001%/k hours. Designates Reliability Level.  
 (3) To complete KEMET Part Number (T110), insert Lead Material designator – S for Standard or T for 100% Matte Tin. Designates Termination finish. Refer to Ordering Information for additional detail.







**Table 1 – Ratings & Part Number Reference cont'd**

Rated Voltage	Rated Cap	Case Size Code	KEMET Part Number	DC Leakage	DF % at 25°C	MIL-PRF-39003 (CSR13) Capacitors										KEMET Equivalent Military		
						Dash Number Reference								KEMET Equivalent Military				
						Failure Rate Level (%/1,000 hours)												
						MIL-PRF-39003/1K				MIL-PRF-39003/1K				Part Number				
						Exponential				Graded								
VDC	µF		(See below for part options)	µA at 25°C Max/5 Minutes	120 Hz Maximum	M (1.0)	P (0.1)	R (0.01)	S (0.001)	G (1.0)	B (0.1)	C (0.01)	D (0.001)	Part Number				
50	18.0	C	T110C186J050A(3)	4.5	4	5093	5293	5493	5693	4231	6231	7231	8231	T212C186J050(2)S				
50	18.0	C	T110C186K050A(3)	4.5	4	2379	2619	2859	3099	4232	6232	7232	8232	T212C186K050(2)S				
50	18.0	C	T110C186M050A(3)	4.5	4													
50	22.0	D	T110D226J050A(3)	5.5	4	5094	5294	5494	5694	4233	6233	7233	8233	T212D226J050(2)S				
50	22.0	D	T110D226K050A(3)	5.5	4	2380	2620	2860	3100	4234	6234	7234	8234	T212D226K050(2)S				
50	22.0	D	T110D226M050A(3)	5.5	4	2381	2621	2861	3101	4235	6235	7235	8235	T212D226M050(2)S				
60	0.0047	A	T110A472(1)060A(3)	0.3	3													
60	0.0056	A	T110A562(1)060A(3)	0.3	3													
60	0.0068	A	T110A682(1)060A(3)	0.3	3													
60	0.0082	A	T110A822(1)060A(3)	0.3	3													
60	0.01	A	T110A103(1)060A(3)	0.3	3													
60	0.012	A	T110A123(1)060A(3)	0.3	3													
60	0.015	A	T110A153(1)060A(3)	0.3	3													
60	0.018	A	T110A183(1)060A(3)	0.3	3													
60	0.022	A	T110A223(1)060A(3)	0.3	3													
60	0.027	A	T110A273(1)060A(3)	0.3	3													
60	0.033	A	T110A333(1)060A(3)	0.3	3													
60	0.039	A	T110A393(1)060A(3)	0.3	3													
60	0.047	A	T110A473(1)060A(3)	0.3	3													
60	0.056	A	T110A563(1)060A(3)	0.3	3													
60	0.068	A	T110A683(1)060A(3)	0.3	3													
60	0.082	A	T110A823(1)060A(3)	0.3	3													
60	0.1	A	T110A104(1)060A(3)	0.5	3													
60	0.12	A	T110A124(1)060A(3)	0.5	3													
60	0.15	A	T110A154(1)060A(3)	0.5	3													
60	0.18	A	T110A184(1)060A(3)	0.5	3													
60	0.22	A	T110A224(1)060A(3)	0.5	3													
60	0.27	A	T110A274(1)060A(3)	0.5	3													
60	0.33	A	T110A334(1)060A(3)	0.5	3													
60	0.39	A	T110A394(1)060A(3)	0.5	3													
60	0.47	A	T110A474(1)060A(3)	0.5	3													
60	0.56	A	T110A564(1)060A(3)	0.5	3													
60	0.68	A	T110A684(1)060A(3)	0.5	3													
60	0.82	B	T110B824(1)060A(3)	0.5	3													
60	1.0	B	T110B105(1)060A(3)	0.5	3													
60	1.2	B	T110B125(1)060A(3)	0.5	4													
60	1.5	B	T110B155(1)060A(3)	0.5	4													
60	1.8	B	T110B185(1)060A(3)	0.5	4													
60	2.2	B	T110B225(1)060A(3)	1.0	4													
60	2.7	B	T110B275(1)060A(3)	1.0	4													
60	3.3	B	T110B335(1)060A(3)	1.5	4													
60	3.9	B	T110B395(1)060A(3)	1.5	4													
60	4.7	C	T110C475(1)060A(3)	2.0	4													
60	5.6	C	T110C565(1)060A(3)	2.0	4													
60	6.8	C	T110C685(1)060A(3)	3.0	4													
VDC	µF	Case Size Code	(see below for part options)	µA at 25°C Max/5 Minimum	120 Hz Maximum	M (1.0)	P (0.1)	R (0.01)	S (0.001)	G (1.0)	B (0.1)	C (0.01)	D (0.001)	Part Number				
Rated Voltage	Rated Cap	Case Size Code	KEMET Part Number	DC Leakage	DF % at 25°C	MIL-PRF-39003 (CSR13) Capacitors												

- (1) To complete KEMET Part Number, insert M for ±20%, K for ±10%, or J for 5%. Designates capacitance tolerance.  
 (2) To complete KEMET Part Number (T212), insert Graded failure rate – A for Not Applicable, B for 0.1%/k hours, C for 0.01%/k hours, D for 0.001%/k hours, or G for 1%/k hours; or insert Exponential failure rate – M for 1%/k hours, P for 0.1%/k hours, R for 0.01%/k hours, or S for 0.001%/k hours. Designates Reliability Level.  
 (3) To complete KEMET Part Number (T110), insert Lead Material designator – S for Standard or T for 100% Matte Tin. Designates Termination finish. Refer to Ordering Information for additional detail.

**Table 1 – Ratings & Part Number Reference cont'd**

Rated Voltage	Rated Cap	Case Size Code	KEMET Part Number	DC Leakage	DF % at 25°C	MIL-PRF-39003 (CSR13) Capacitors									
						Dash Number Reference								KEMET Equivalent Military	
						Failure Rate Level (%/1,000 hours)									
						MIL-PRF-39003/1K				MIL-PRF-39003/1K					
						Exponential				Graded					
VDC	µF		(See below for part options)	µA at 25°C Max/5 Minutes	120 Hz Maximum	M (1.0)	P (0.1)	R (0.01)	S (0.001)	G (1.0)	B (0.1)	C (0.01)	D (0.001)	Part Number	
60	8.2	C	T110C825(1)060A(3)	4.0	4										
60	10.0	C	T110C106(1)060A(3)	5.0	4										
60	12.0	C	T110C126(1)060A(3)	5.0	4										
60	15.0	D	T110D156(1)060A(3)	4.0	4										
60	18.0	D	T110D186(1)060A(3)	5.0	4										
60	22.0	D	T110D226(1)060A(3)	6.0	4										
75	0.0047	A	T110A472(1)075A(3)	0.3	2										
75	0.0056	A	T110A562(1)075A(3)	0.3	2										
75	0.0068	A	T110A682(1)075A(3)	0.3	2										
75	0.0082	A	T110A822(1)075A(3)	0.3	2										
75	0.01	A	T110A103(1)075A(3)	0.3	2										
75	0.012	A	T110A123(1)075A(3)	0.3	2										
75	0.015	A	T110A153(1)075A(3)	0.3	2										
75	0.018	A	T110A183(1)075A(3)	0.3	2										
75	0.022	A	T110A223(1)075A(3)	0.3	2										
75	0.027	A	T110A273(1)075A(3)	0.3	2										
75	0.033	A	T110A333(1)075A(3)	0.3	2										
75	0.039	A	T110A393(1)075A(3)	0.3	2										
75	0.047	A	T110A473(1)075A(3)	0.3	2										
75	0.056	A	T110A563(1)075A(3)	0.3	2										
75	0.068	A	T110A683(1)075A(3)	0.3	2										
75	0.082	A	T110A823(1)075A(3)	0.3	2										
75	0.1	A	T110A104J075A(3)	0.3	2	5095	5295	5495	5695					T212A104J075(2)S	
75	0.1	A	T110A104K075A(3)	0.3	2	2382	2622	2862	3102					T212A104K075(2)S	
75	0.1	A	T110A104M075A(3)	0.3	2	2383	2623	2863	3103					T212A104M075(2)S	
75	0.12	A	T110A124J075A(3)	0.3	2	5096	5296	5496	5696					T212A124J075(2)S	
75	0.12	A	T110A124K075A(3)	0.3	2	2384	2624	2864	3104					T212A204K075(2)S	
75	0.12	A	T110A124M075A(3)	0.3	2										
75	0.15	A	T110A154J075A(3)	0.3	2	5097	5297	5497	5697					T212A154J075(2)S	
75	0.15	A	T110A154K075A(3)	0.3	2	2385	2625	2865	3105					T212A154K075(2)S	
75	0.15	A	T110A154M075A(3)	0.3	2	2386	2626	2866	3106					T212A154M075(2)S	
75	0.18	A	T110A184J075A(3)	0.3	2	5098	5298	5498	5698					T212A184J075(2)S	
75	0.18	A	T110A184K075A(3)	0.3	2	2387	2627	2867	3107					T212A184K075(2)S	
75	0.18	A	T110A184M075A(3)	0.3	2										
75	0.22	A	T110A224J075A(3)	0.3	2	5099	5299	5499	5699					T212A224J075(2)S	
75	0.22	A	T110A224K075A(3)	0.3	2	2388	2628	2868	3108					T212A224K075(2)S	
75	0.22	A	T110A224M075A(3)	0.3	2	2389	2629	2869	3109					T212A224M075(2)S	
75	0.27	A	T110A274J075A(3)	0.3	2	5100	5300	5500	5700					T212A274J075(2)S	
75	0.27	A	T110A274K075A(3)	0.3	2	2390	2630	2870	3110					T212A274K075(2)S	
75	0.27	A	T110A274M075A(3)	0.3	2										
75	0.33	A	T110A334J075A(3)	0.3	2	5101	5301	5501	5701					T212A334J075(2)S	
75	0.33	A	T110A334K075A(3)	0.3	2	2391	2631	2871	3111					T212A334K075(2)S	
75	0.33	A	T110A334M075A(3)	0.3	2	2392	2632	2872	3112					T212A334M075(2)S	
75	0.39	A	T110A394J075A(3)	0.3	2	5102	5302	5502	5702					T212A394J075(2)S	
75	0.39	A	T110A394K075A(3)	0.3	2	2393	2633	2873	3113					T212A394K075(2)S	
VDC	µF	Case Size Code	(see below for part options)	µA at 25°C Max/5 Minimum	120 Hz Maximum	M (1.0)	P (0.1)	R (0.01)	S (0.001)	G (1.0)	B (0.1)	C (0.01)	D (0.001)	Part Number	
Rated Voltage	Rated Cap	Case Size Code	KEMET Part Number	DC Leakage	DF % at 25°C	MIL-PRF-39003 (CSR13) Capacitors									

(1) To complete KEMET Part Number, insert M for ±20%, K for ±10%, or J for 5%. Designates capacitance tolerance.  
(2) To complete KEMET Part Number (T212), insert Graded failure rate – A for Not Applicable, B for 0.1%/k hours, C for 0.01%/k hours, D for 0.001%/k hours, or G for 1%/k hours; or insert Exponential failure rate – M for 1%/k hours, P for 0.1%/k hours, R for 0.01%/k hours, or S for 0.001%/k hours. Designates Reliability Level.  
(3) To complete KEMET Part Number (T110), insert Lead Material designator – S for Standard or T for 100% Matte Tin. Designates Termination finish. Refer to Ordering Information for additional detail.











**Table 1 – Ratings & Part Number Reference cont'd**

Rated Voltage	Rated Cap	Case Size Code	KEMET Part Number	DC Leakage	DF % at 25°C	MIL-PRF-39003 (CSR13) Capacitors										KEMET Equivalent Military
						Dash Number Reference										
						Failure Rate Level (%/1,000 hours)										
						MIL-PRF-39003/1K					MIL-PRF-39003/1K					
						Exponential					Graded					
VDC	µF		(See below for part options)	µA at 25°C Max/5 Minutes	120 Hz Maximum	M (1.0)	P (0.1)	R (0.01)	S (0.001)	G (1.0)	B (0.1)	C (0.01)	D (0.001)	Part Number		
125	0.012	A	T110A123(1)125A(3)	0.5	3											
125	0.015	A	T110A153(1)125A(3)	0.5	3											
125	0.018	A	T110A183(1)125A(3)	0.5	3											
125	0.022	A	T110A223(1)125A(3)	0.5	3											
125	0.027	A	T110A273(1)125A(3)	0.5	3											
125	0.033	A	T110A333(1)125A(3)	0.5	3											
125	0.039	A	T110A393(1)125A(3)	1.5	3											
125	0.047	A	T110A473(1)125A(3)	1.5	3											
125	0.056	A	T110A563(1)125A(3)	1.5	3											
125	0.068	A	T110A683(1)125A(3)	1.5	3											
125	0.082	A	T110A823(1)125A(3)	1.5	3											
125	0.1	A	T110A104(1)125A(3)	1.5	3											
125	0.12	A	T110A124(1)125A(3)	1.5	3											
125	0.15	A	T110A154(1)125A(3)	1.5	3											
125	0.18	A	T110A184(1)125A(3)	1.5	3											
125	0.22	A	T110A224(1)125A(3)	1.5	3											
125	0.27	A	T110A274(1)125A(3)	1.5	3											
125	0.33	A	T110A334(1)125A(3)	1.5	3											
125	0.39	B	T110B394(1)125A(3)	1.5	3											
125	0.47	B	T110B474(1)125A(3)	1.5	3											
125	0.56	B	T110B564(1)125A(3)	1.5	3											
125	0.68	B	T110B684(1)125A(3)	1.5	3											
125	0.82	B	T110B824(1)125A(3)	1.5	3											
125	1.0	B	T110B105(1)125A(3)	1.5	3											
125	1.2	B	T110B125(1)125A(3)	1.5	3											
125	1.5	B	T110B155(1)125A(3)	1.5	3											
125	1.8	B	T110B185(1)125A(3)	1.5	3											
125	2.2	B	T110B225(1)125A(3)	1.5	3											
125	2.7	C	T110C275(1)125A(3)	2.0	3											
125	3.3	C	T110C335(1)125A(3)	2.0	3											
125	3.9	C	T110C395(1)125A(3)	2.0	3											
125	4.7	C	T110C475(1)125A(3)	3.0	3											
125	5.6	C	T110C565(1)125A(3)	3.0	3											
125	6.8	C	T110C685(1)125A(3)	3.0	3											
125	8.2	D	T110D825(1)125A(3)	6.0	3											
125	10.0	D	T110D106(1)125A(3)	6.0	3											
VDC	µF	Case Size Code	(see below for part options)	µA at 25°C Max/5 Minimum	120 Hz Maximum	M (1.0)	P (0.1)	R (0.01)	S (0.001)	G (1.0)	B (0.1)	C (0.01)	D (0.001)	Part Number		
Rated Voltage	Rated Cap	Case Size Code	KEMET Part Number	DC Leakage	DF % at 25°C	MIL-PRF-39003 (CSR13) Capacitors										

- (1) To complete KEMET Part Number, insert M for ±20%, K for ±10%, or J for 5%. Designates capacitance tolerance.
- (2) To complete KEMET Part Number (T212), insert Graded failure rate – A for Not Applicable, B for 0.1%/k hours, C for 0.01%/k hours, D for 0.001%/k hours, or G for 1%/k hours; or insert Exponential failure rate – M for 1%/k hours, P for 0.1%/k hours, R for 0.01%/k hours, or S for 0.001%/k hours. Designates Reliability Level.
- (3) To complete KEMET Part Number (T110), insert Lead Material designator – S for Standard or T for 100% Matte Tin. Designates Termination finish. Refer to Ordering Information for additional detail.

## Ripple Current/Ripple Voltage

Permissible AC ripple voltage is related to the ESR of the capacitor and the power dissipation capabilities of a particular case size.

Thermal capacities for the various case sizes have been determined empirically and are listed below.

Temperature Compensation Multipliers for Maximum Power Dissipation		
T ≤ 25°C	T ≤ 85°C	T ≤ 125°C
1.00	0.90	0.40

*T = Environmental Temperature*

Permissible AC ripple current can be determined by the following:

$$I(max) = Z \sqrt{P_{max}/R}$$

*P max = maximum watts*

*R = ESR at specified frequency (ohms)*

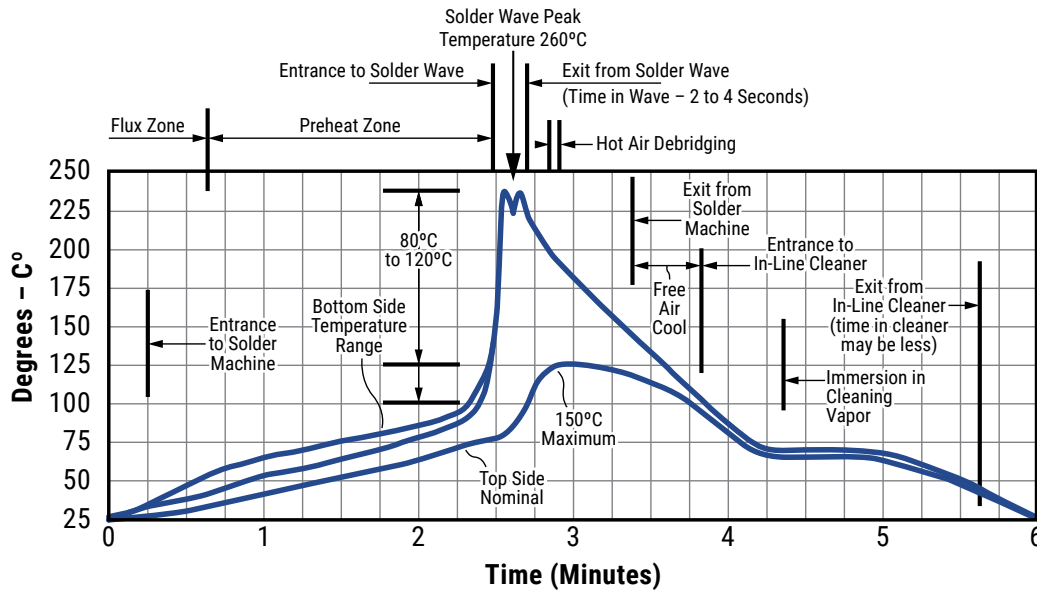
*I = rms ripple current (amperes)*

*Z = capacitor impedance in ohms at the specified frequency*

Case Size	Maximum Power Dissipation (P max)	T2XX
A	0.09	0.070
B	0.100	0.090
C	0.125	–
D	0.180	–

*Maximum Power Dissipation: 25°C Ambient*

## Optimum Solder Wave Profile



## Reverse Voltage

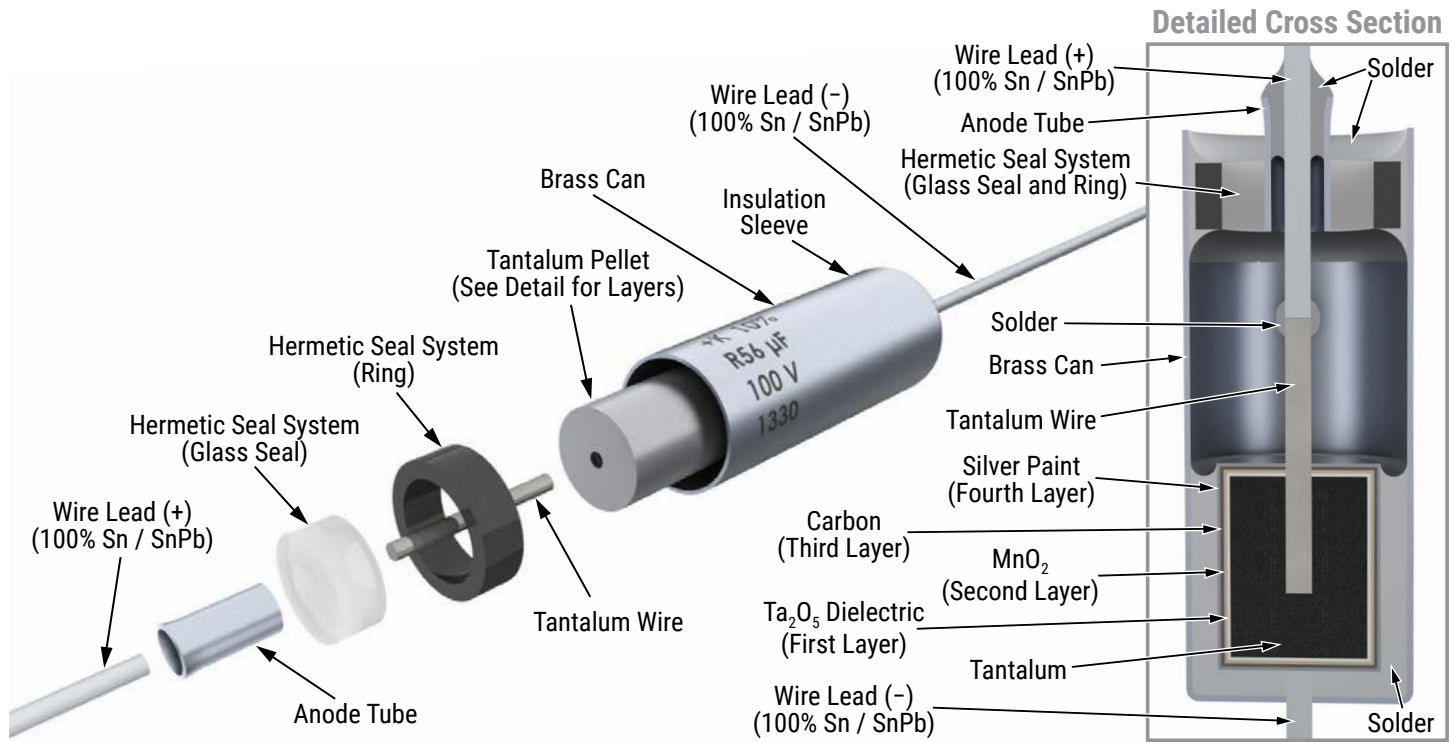
Although these are polar capacitors, some degree of transient voltage reversal is permissible, as seen below. The capacitors should not be operated continuously in reverse mode, even within these limits.

Temperature	Percentage of Rated Voltage
+25°C	15
+85°C	5
+125°C	1

## Mounting

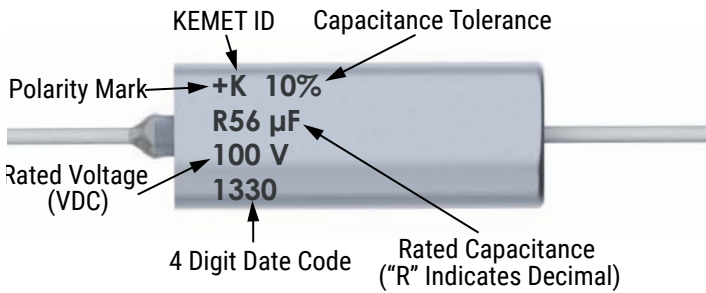
All encased capacitors will pass the Resistance to Soldering Heat Test of MIL-STD-202, Method 210, Condition C. This test simulates wave solder of topside board mount product. This demonstration of resistance to solder heat is in accordance with what is believed to be the industry standard. More severe treatment must be considered reflective of an improper soldering process. The above figure is a recommended solder wave profile for both axial and radial leaded solid tantalum capacitors.

## Construction

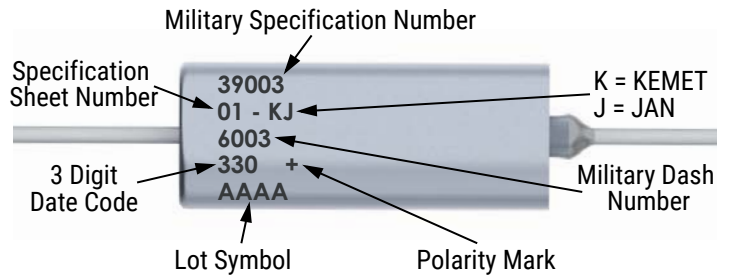


## Capacitor Marking

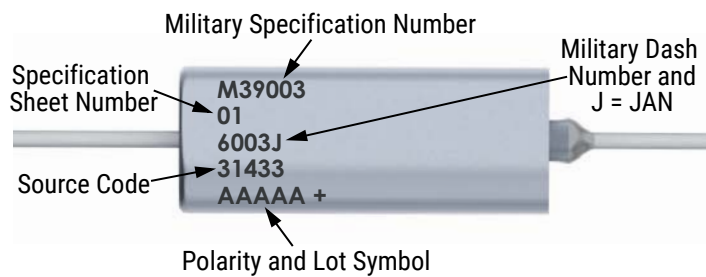
### T110



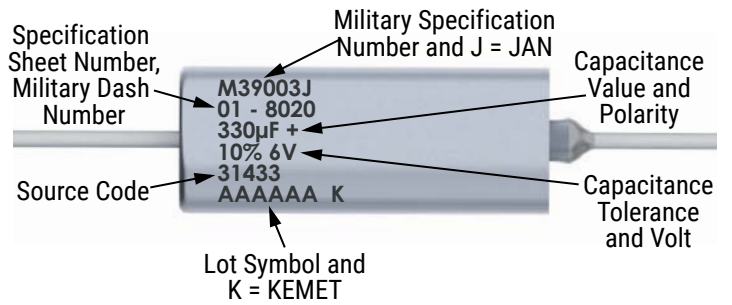
### T212 – A Case



### T212 – B Case



### T212 – C and D Case



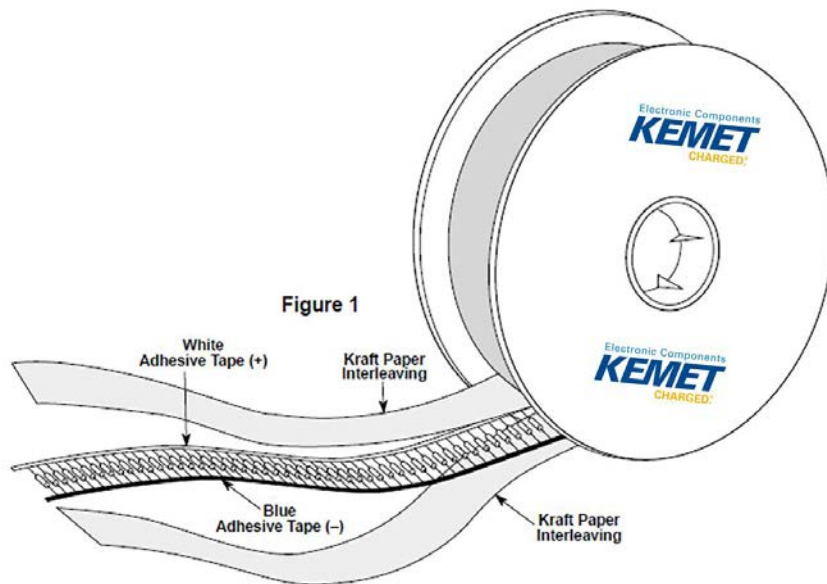
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Year	5 = 2015	15 = 2015
	6 = 2016	16 = 2016
	7 = 2017	17 = 2017
	8 = 2018	18 = 2018
	9 = 2019	19 = 2019
Week	01 = 1 <sup>st</sup> week of the year to 52 = 52 <sup>nd</sup> week of the year	

## Storage

Tantalum hermetically sealed capacitors should be stored in normal working environments. While the capacitors themselves are quite robust in other environments, solderability will be degraded by exposure to high temperatures, high humidity, corrosive atmospheres, and long term storage. In addition, packaging materials will be degraded by high temperature – reels may soften or warp and tape peel force may increase. KEMET recommends that maximum storage temperature not exceed 40°C and maximum storage humidity not exceed 60% relative humidity. Temperature fluctuations should be minimized to avoid condensation on the parts and atmospheres should be free of chlorine and sulphur bearing compounds. For optimized solderability capacitors stock should be used promptly, preferably within three years of receipt.

## Tape & Reel Packaging Information

KEMET offers standard reeling of Solid Tantalum Capacitors for automatic insertion or lead forming machines per EIA Specification RS-296E.

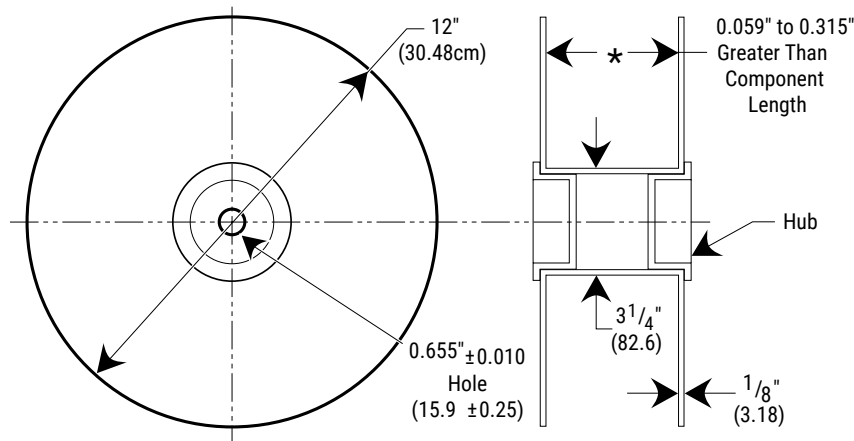


**Table 2 – Packaging Quantity**

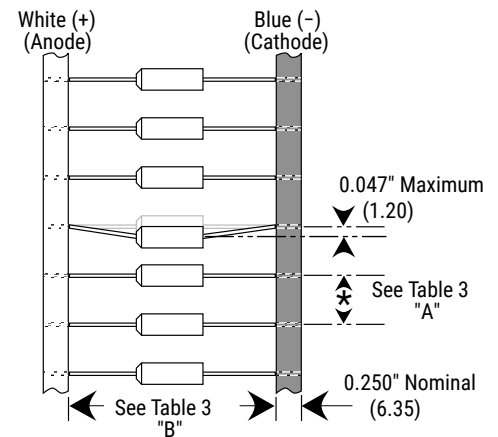
Case Size	Standard Bulk Quantity	Standard Reel Quantity	Reel C-Spec	Ammo Pack Quantity	Ammo Pack C-Spec
A	150/Box	3,500	C-7200	1,500	C-7293
B	75/Box	2,500	C-7200	1,000	Class I
C	20/Tray	500	C-7200	250	C-7442
D	20/Tray	400	C-7200	250	Class II C-7443 Class III



**Figure 2**



**Figure 3**



**Table 3 – Tape Dimensions**

Component Body Diameter	Component Pitch "A"	Inside Tape Spacing "B" ±1.5 mm (0.059")		
		I	II	III
0" (0 mm) to 0.197" (5 mm)	0.020" or (±0.5 mm)	2.062"	2.500"	2.874"
0.197" (5.01 mm) to 0.394" (10 mm)	0.400 or (10 mm)	(52.4 mm)	(63.5 mm)	(73 mm)

Capacitors are reeled so that positive leads are oriented as shown in Figure 3. Kraft paper (50lb. test minimum) is inserted between the layers of capacitors wound on reels for component pitch  $\leq 0.200$ " sizes and corrugated paper (70 lb. test minimum), single faced is inserted for component pitch  $\geq 0.400$ " sizes. Capacitor lead length may extend only a maximum of 0.031" (0.8 mm) beyond the tape's edges. Capacitors are centered in a row between the two tapes and will deviate only  $\pm 0.031$ " (0.79 mm) from the row center. Figures 1 and 2 show the KEMET standard chipboard tape reel. A minimum of 36" (91.5 cm) leader tape is provided at each end of the reeled capacitors. Universal splicing clips are used to connect the tape.

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